The
Practical Winery
3811 Clair Dr.
Carmichael, Ca.
95608

BULK RATE
U. S. POSTAGE
PAID
BULK MAILING PERMIT
255
CARMICHAEL, CA

The Practical Winery

December 80
January 81

TELL YOUR FRIENDS ABOUT The Practical Winery

The Pracitcal Winery is
published bi-monthly by
Tony Norskog and Assoc.
Editorial and Business
offices; 3811 Clair Dr.
Carmichael, CA 95608
(916) 944-1599
Subscription Rates;
$20/year. Outside the
United States, please
add $4/year.
News media may use no more
than one quarter page of
material per issue provided
The Practical Winery is
credited.

The Practical Winery

THE PRODUCERS ADVOCATE

December 1980
January 1981

Volume 1, No. 5

Tony Norskog
Editor/Enologist

North Coast Representative
Willis 'Tex' Sawyer

Central Coast
Representative
Jeff Booth

Davis Representative
Stephen B. Thomas

Table of Contents

INTERVIEW WITH BOB RODGERS.......4

PROCESS EQUIPMENT SPOTLIGHT ON PUMPS.............9

SAFE PRODUCTION AND USE OF LIQUID SO_2.......15

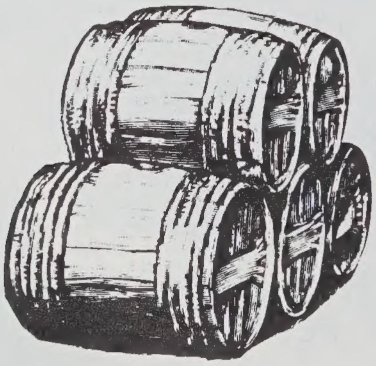
BOOK REVIEW........17

VINTAGE IDEAS......18

INTERVIEW WITH

BOB ROGERS of custom cooperage

Bob Rogers, formerly a school teacher, is one of the newest members of the interesting profession of coopering. His honesty and skill, coupled with a love of fine wine are fast making him one of the most trusted coopers.



Practical Winery; I just bought a new barrel, how do I treat it?

Bob Rogers ; Put water in it.

P.W. Citric acid, SO_2 also?

B.R. It wouldn't hurt, but if the barrel is brand new it should swell up pretty fast- a couple of days. Generally French barrels swell up a little bit faster because they are coopered a little bit better, and the wood is more porous so it soaks up the water faster than American Oak.

You might also tighten the hoops lightly. Most American oak doesn't need it, we bring ours in by refrigerated trucks so we have them two days after they are made. We don't suggest you tighten them. French oak comes in containers and they leave them a little loose and ask us to tighten them up when we get them.

P.W. Are there differences in porosity within the countries?

B.R. It seems like there are differences between the manufacturers. This cooper has been very good (pointing to a Marchive barrel). Out of 10 containers we've had to fix only 30 or 40 barrels. Thats fixing leaks mostly.

P.W. Is that due to poor coopering?

B.R. No, it's either selection of wood, or it's the only wood they have available. A problem area for leakage is when it leaks out the end grain of the staves. In the manufacture of the barrel they scoop out some of the inner wood, probably to facilitate bending the stave. This opens up some of the tubes which carried water up the tree, and they will also seep wine. They try to stop this by cutting the croze deep enough to intercept it.

P.W. Do they treat the croze with wax?

B.R. What they do is to roll the head in wax which helps seal the croze, expecially in American cooperage houses. The French use a flour paste mixture called 'farine' Sort of a corn meal paste. The other way we do it is to use cat tail in the croze, which swells to seal the joint This is called 'flagging' a barrel.

P.W. How do you seal off an end grain leak if the wine is flowing through the wood, past the croze?

B.R. You can paint it with epoxy, Plasticoat or Mildewcide.

P.W. Does the Mildewcide work?

B.R. Not really, well it works a little bit. We find Plasticoat by Moreware to be the easiest. We will often melt wax into the chime to seal up the pores. Even enamel paint will work.

P.W. What can you do when the end hoop is popping off?

B.R. Often they will be bent in from hitting them too much. They should be removed, and flattened out with a large hammer, we use a 4 lb sledge hammer. Then get line marking chalk and mark the wood all the way around the width of the hoop. Then mark the inside of the hoop and hammer it back on. This chalk creates friction to hold on the hoop. French oak barrels have such a taper one has trouble keeping them on.

P.W. How about storeing them, say I empty them in March or April and don't need them till next crush.

B.R. You have two choices, depending on how much flavor you want to lose. You can leave them full of sulfur and citric (in water) at about 250 ppm. If you do this the only problem you'll have is wood bores, which you can fix later. The other system is to sulfur them heavily and store them in a cool area. You should really take them out every month or so and re-swell them, let them sit an extra day, then empty and sulfur them again. They will come back even if you wait longer, but the safest way is to keep them full of H_2O and sulfur/citric. Even though you lose some flavor keeping them full of water, for neutral storage it's great.

P.W. What do you recommend for lots of tartrates inside?

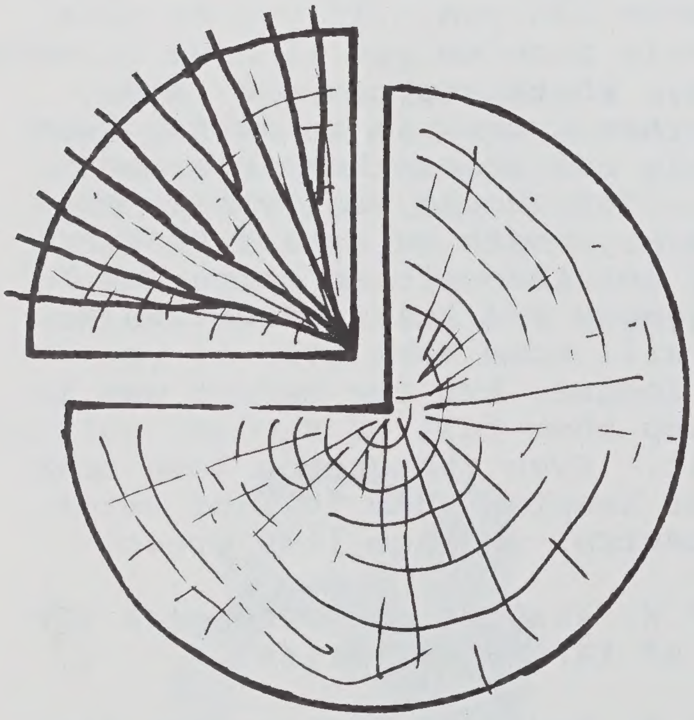
B.R. Soda ash. I suggest that when you get used barrels you use soda ash or strong SO_2, Antibac or steam them.

P.W. Will the high heat hurt the barrels?

B.R. We did a car load of whiskey barrels for Ventana down in Soledad, and they filled them half full with water, then stuck their steam wand in until they were full. The water was essentially 212°F, which they would leave for 24 hours. Of course they were trying to leach the barrels, but they didn't get any breakage or problems. I understand 10 minutes at 180°F will kill any bacteria.

P.W. This brings up the question of what people outside the Napa Valley call the 'Napa Valley clap', Brettanomyces. What's the best protection?

B.R. I asked Lisa at the Wine Lab about this and she says 100-200 parts per million chlorine for 24 hrs. If used hot it gets there faster. The chlorine also bleaches out any color. We use Scott III tank cleaner because it has some chlorine as well as soda ash and works well. We recommend it when we shave them to tone down the new wood character.



Hand Split

Less staves, but they all run with the rays

P.W. How much do you shave off in the shaving process?

B.R. We cut about 1/4 inch. This cuts as deep as the wine seems to penetrate.

P.W. Tell me something, if the forest of Nevers is near burgundy and Limoges is near Bordeaux, why does one find a Bordeaux coopered Nievre barrel?

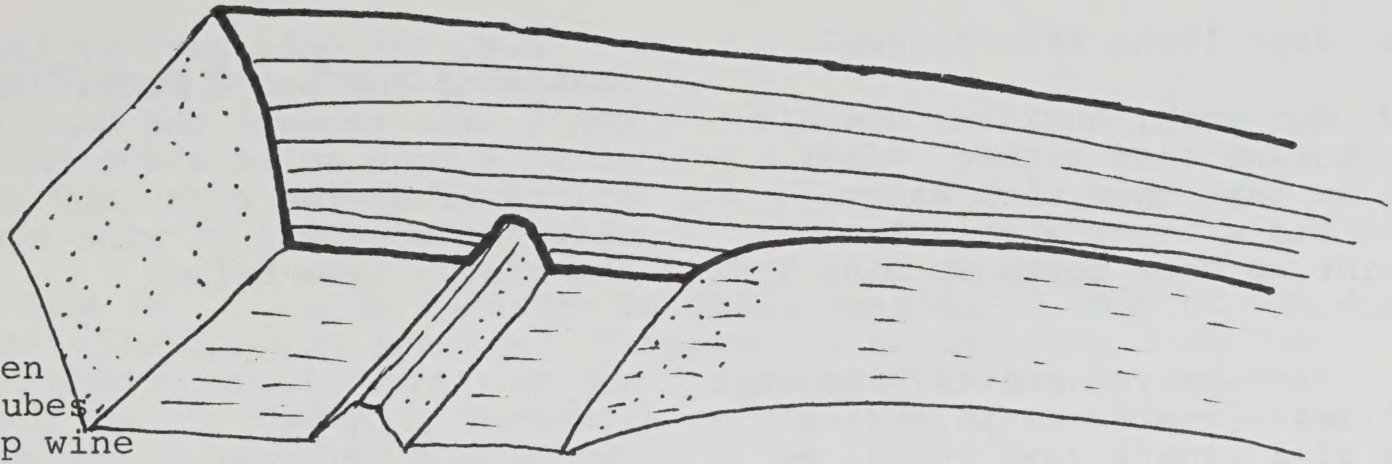
B.R. Well, you'd wonder. I think they do about the same thing we do here; there are stave manufacturers in every forested area who sell their staves to the highest bidder. In America, everybody buys staves from everywhere. Burbon Cooperage has 42 stave manufacturers to buy from. They are generally family companies and they sell a raw stave; that is, they look like staves but don't yet have the croze cut in them. So there are no real localized barrels made. I believe the same thing is going on in France.

P.W. Do you think there is any foreign wood in a French barrel?

B.R. Not all of them, but I think there may be some American and Yugoslavian wood in some of the 'French' barrels, but I can't prove it. Woods are hard to distinguish. For example, I asked Philipe Demptos if he could tell the difference between Limousin and Nievre He said he could. I asked him if he could tell me what woods were in a particular Marchive barrel. He poked around and couldn't tell me anything. He says usually you see this or that, but nobody knows. His description to me was that Nievre had a tighter grain than Limousin, but who knows. Oaks have a strong tendency to interbreed.

P.W. What do you think of Yugoslavian oak?

B.R. Yugolsavian oak usually has lots of big rosettes- where they have cut across the grain.



Note open sieve tubes can seep wine

Cut away to facilitate bending the stave in barrel manufacture. This will be exaggerated when the barrel is scraped.

It also generally has wider grain, and is coopered worse than the others.

P.W. Have you seen the food grade plastic bungs Markham winery is using?

B.R. No, I haven't seen them, but if they don't give a taste then I would really be in favor of them.

P.W. What type of bungs do you recommend?

B.R. I like redwood and fir, not oak, because they are too hard. The bungs should be softer than the bung hole to make the seal. Redwood is the softest but it tends to get indented where it fits the bung hole. Fir is a little harder, but still softer than the bung stave. An oak bung will tend to break the bung stave.

P.W. What do you think of the various bung coatings?

B.R. I don't like any of them, We don't sell any of them because we always found they gave a flavor to the wine.

P.W. How do you solve the problem of sieve tube wicking?

B.R. I recommend hot wax on the bottom of the bung. This white coating (pointing to a bung dipped in the white epoxy paints) and some others tend to smooth out the bung hole- even polish it so that when you drive in the bung it bounces back out. We have been telling people to heat the bungs in the oven at 350°F for 15-20 min. and using a glove, put them in some hot, melted wax. It just sucks it right into the pores. Just put it on the lower part of the bung, as you don't want to coat the bearing area of the bung.

P.W. How do you seal off end grain leakage on the chime?

B.R. We see this quite a bit with French oak, expecially after we have shaved the barrel. What we do is try to pinpoint the hole, drill it with a 1/8" bit and drive in a 1/4" tapered plug. This will block the hole and squeeze off the sieve tubes around it. Another method is to use O'Sullivan wet liner. We try not to use it, though. Sometimes even melted wax will work.

P.W. How can you minimize wood bore damage?

B.R. Keep the doors closed around bore time. Around here it's mostly between late May and late June. They live on the hillsides around here, and they get blown around when they fly. They love this place because it's all wood. They prefer oak, and especially like French oak. They have expensive taste. Anything that's near the door, especially near the windward side of the building gets it worst.

P.W. Does light effect them?

B.W. Not much, humidity doesn't seem to bother them either. After shaving we test them with water, but wine has a lower viscosity and will point up bore holes we miss in the check.

P.W. Perhaps you can tell me why the following repair works. When working at a winery down south, we recieved some new oak tanks. One of them had some bad leaks through the grain in the center of the stave. There was no obvious hole, but you could watch the wood sweat wine at an unaccectable rate, and when the consultant was asked for a remedy, he suggested rubbing garlic in the form of a clove into the grain, and then following with chalk, rubbing it in also. I was selected to try this method and, much to my amazement, it worked like a charm.

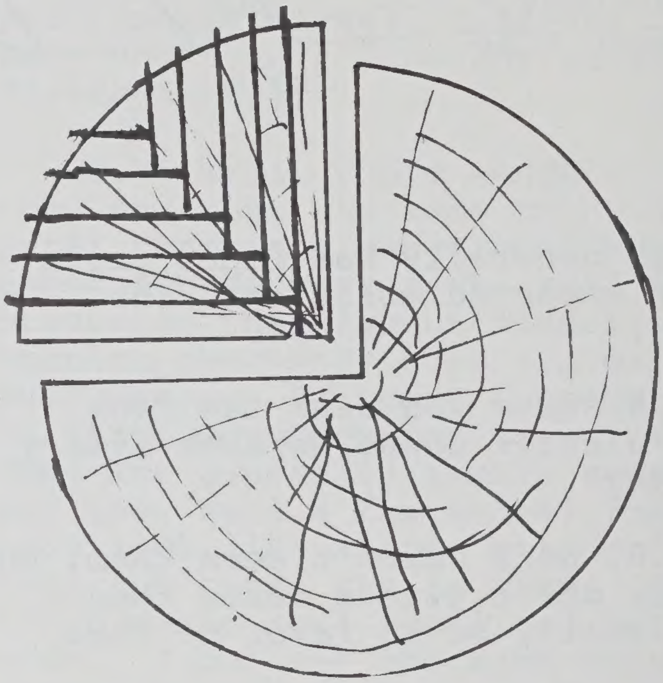
B.R. I've heard that, I'll have to try it. That's one problem with working on full cooperage, the pressure is working against you. You know, I have a few cloves of garlic around. I never quite believed it would work, either.

P.W. How do you approach a major tank leak - epoxy?

B.R. Well, we try to stay away from epoxy if at all possible, just because we used so much of it when we were learning. We found if you don't do it exactly right it tends to peel off, or you get wine under it, which will spoil. If you have to use it, grind it down all the way to new wood. That's the only way to make it stick.
Another point when applying epoxy to the outside of barrels, you generally have to do it when they are empty, and keep the bung loose. If the bung is in tight and it is a warm day you will have a positive pressure in the barrel which causes problems.

P.W. How does a hand split stave differ from a quarter sawn stave?

B.R. The only part of the tree usable is the heart wood. Water can't pass through the hard rays so in a hand split stave the wood splits along the rays, and the rays stop the movement of wine through the stave. (see below)



Quarter Sawn

More staves, but rays may run diagonally

When quarter sawn the outer cuts may have the rays running diagonally through the staves. If an inter-ray area is exposed to both faces of the stave, it may leak by seeping through the grain.
The economics of it is you get more staves if the wood is quarter sawn. Hand splitting wastes a lot of wood, but insures a better stave.
If you look at a lot of the new French cooperage which claims to be hand split, this isn't true. There is some angle stuff which means to me they are hand splitting some and sawing some for better wood use. If you have any problem with an oak barrel leaking through the bilge, it's probably a sawn stave. With a problem like this I guess we should start trying garlic and chalk, instead of running for the epoxy.

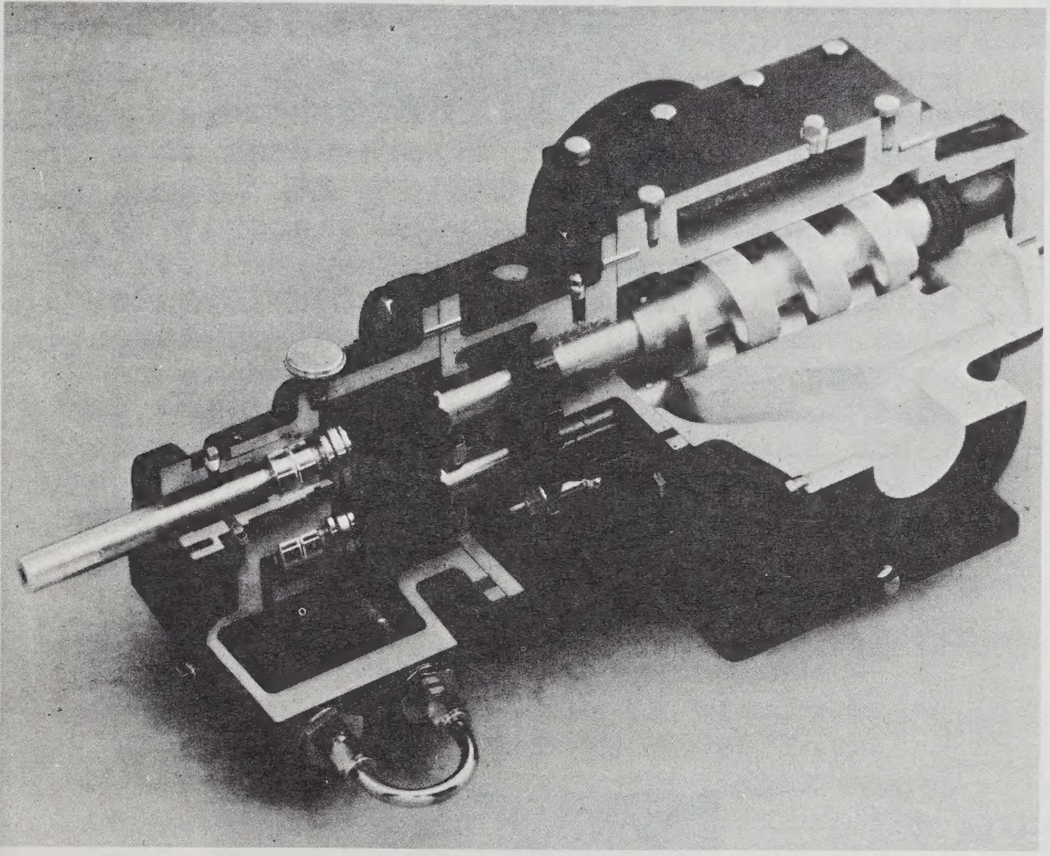
Equipment Notes

Let's face it, the wine industry is small peanuts to many of the equipment manufacturers in America. Compared to an industry like the corrosive chemical manufacturers we don't buy much equipment, and our applications change radically depending on the size of the winery, and and the quality of product it produces.

In the interest of expanding the wine industry suppliers list beyond the half dozen or so who plunder us regularly, The Practical Winery will be giving some space each issue to equipment suppliers who lie outside our general exposure.

The following items may or may not find application in your winery, but if you are interested in further information on any product please use the reader service card inside the back cover with no obligation.

Next issue look for an indepth look at the filtration equipment available and a listing of the over 25 filter manufacturers in the U.S. Also, a look at the properties of the new plastics used in equipment manfacture will be included.



COMPACT SCREW PUMPS

Compact screw pumps come in two basic designs for long service life. Pumps cover a capacity range to over 1400 psi and virtually unlimited viscosities with corrosive or non corrosive liquids. Series 2500/2200 screw pumps.

(Compact Screw Pumps - Warren Pumps Div., Houdaille Industries, Inc.)

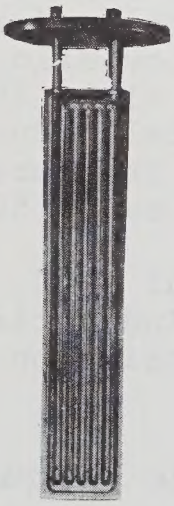
Circle 1 opposite last page

TANK HEATERS/COOLERS

Panelcoil° heat transfer components installed thru or in tank manways. Complete assemblies include pipe manifolds bracing and mounting brackets in same material of construction as Panelcoil.

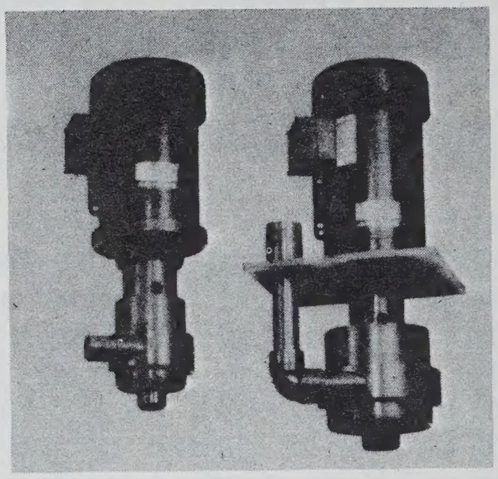
(Panelcoil® - Dean products, Inc.
985 Dean street, Brooklyn, NY
11238

circle 2 opposite last page



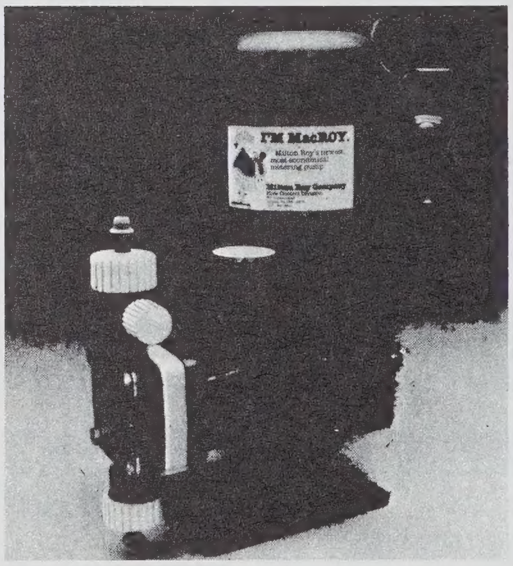
PLASTIC VERTICAL PUMPS

Veritcal immersible pumps can be furnished in either GPVC or polypropylene construction for service with most acids, alkalis and solvents at temperatures to 180°F. The sealless pumps can run dry without damage and are designed for in-tank or outside mounting. Five models are available for flow rates from 10 to 160 gpm and can be furnished with explosion proof, TEFC, or air motor drives.



(Vertical Immersible Pumps - Flotec, Inc.
14510 S. Carmenita Rd., Norwald, CA 90650.)

circle 3 opposite last page



ECONOMICAL METERING PUMP FOR CORROSIVES, SLURRIES

Mechanically actuated diaphram metering pump is designed for virtually maintenance-free operation in light to moderate service. Three models are available with adjustable capacities from 0.62 to 5.1 gph at pressures to 145 psig, accurate within ± 2%. The pump can meter fluids with viscosities to 10,000 cps and slurries up to 15% solids. Construction features include aluminum housing with chemical-resistant coating, wear-resistant drive and corrosion-resistant wet end.

(MacROY° Metering Pump - Flow control Div.
Milton Roy Co., 201 Ivyland Rd., Ivyland
PA 18974.)

circle 4 opposite last page

CANNED MOTOR PUMP

Canned motor pump features centrifugal pump and motor in a hermetically sealed case for leakproof operation with costly fluids. Materials of construction for wetted parts include Hastelloy alloy, Type 316 Stainless steel, Alloy 20, titanium or Monel metal. Pump is designed for working pressures to 300 psi with capacities to 500 gpm.

(Canned motor pump Bul 4300. Pacific
Pumps Div., Dresser Industries, Inc.
5715 Bickett St., Huntington Park,
CA 90255)

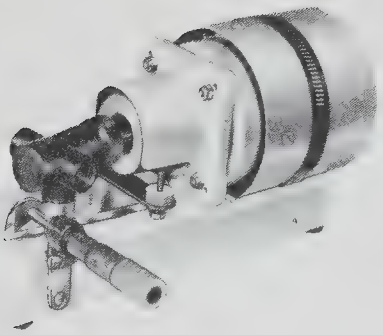
circle 5 opposite last page

PISTON METERING PUMPS HANDLE SUSPENSIONS, SLURRIES

Metering accuracy of 0.1% in flow ranges from microliters to liters per minute can be achieved in pressure ranges to 100 psi. Various pump heads available for metallic, non-metalic and sanitary applications.

(FMI metering pumps - FMI Fluid Metering Inc., 29 Orchard Street, Oyster Bay, NY 11771.)

circle 6 opposite last page



POLYSULFONE PUMPS

Centrifugal pumps for service with corrosive liquids at temperatures to 200°F have all wetted parts molded of Union Carbide's Udel brand polysulfone resin. The pumps can be furnished with a reverse mechanical seal where the solution does not come in contact with metal. The pumps are available with flow rates up to 140 gpm.

(Polysulfone pumps - Camac Ind. Div. Carl Buck Corp., 27 Dwight Pl., Fairfield, NJ 07006.)

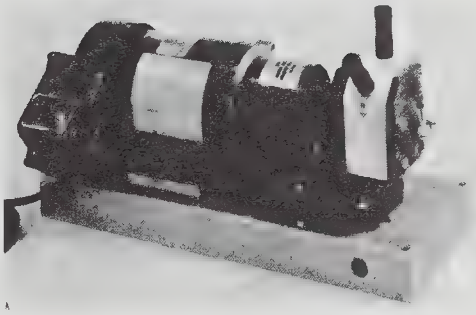
circle 7 opposite last page

METAL-FREE ROTARY PUMP HAS VARIABLE SPEED DRIVE

Positive displacement rotary pump is powered by a special variable speed drive electric motor that permits the speed to be precisely controlled from 300 to 2000 rpm, and capacity from 0.3 to 40 gpm. The pump can be used to accurately meter gases, liquids with a wide range of viscosities, and slurries.

The peristaltic pump consists of a plastic body block with an elastomeric liner and an oscillating rotor that moves the fluid between the liner and body block. The design eliminates the need for mechanical seals or packing where leakage can occur. The body block is available in stainless steel and a variety of polymers while the flexible liners are available in natural rubber and synthetic elastomers to handle any corrosive material and avoid contamination of ultra-pure fluids.

(Variable Speed Flex-i-liner pump - Vanton Pump & Equipment Corp., 201 Sweetland Ave. Hillside, NJ 07205.)



circle 8 opposite last page

PRESSURE-SENSITIVE LABELING MACHINE

Automatic, wrap-around labeling machine is designed for pressure-sensitive labeling of cylindrical and tapered glass, plastic or metal containers before filling or after capping. This machine operates in line at up to 150 units/min with a wide range of label sizes, shapes and stocks.

The machine is a standard model, but the feed screw and label head designs provide customized operation without the expense of less versatile, specially designed systems. The labeling head mount compensates for tapered and draft angles of products and provides strict accuracy for both tapered and cylindrical containers.

(Model 953 Laveling Machine - Identification Systems Div., Dennison Mfg. Co., 300 Howard St., Framingham, MA 01701

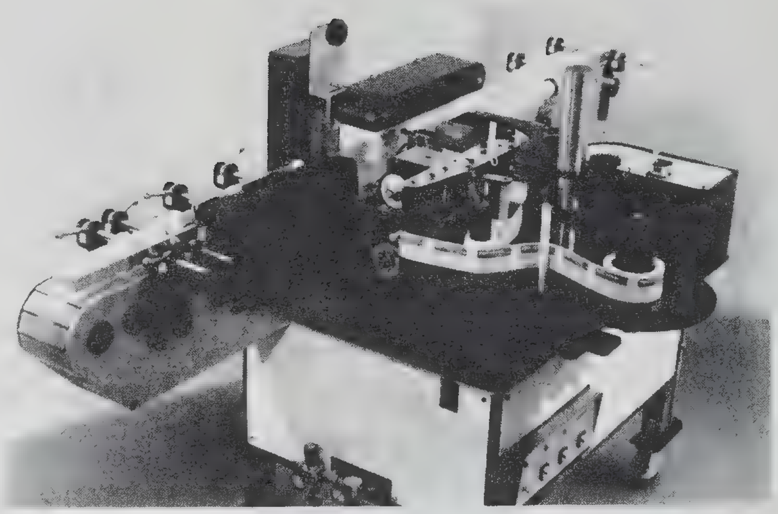
circle 9 opposite last page

CHEMICAL SERVICE PUMP

Centrifugal pumps come in either all CPVC construction or with optional metal shafts, and a selection of over 20 seal combinations for chemical resistance and optimum performance. The end suction pumps are available in capacities up to 90 gpm with discharge heads to 70' and can be furnished with single or 3 phase TEFC or explosion-proof motors.

(CPVC Pumps- Flotec, Inc., 14510 S. Carmenita Rd., Norwald, CA 90650.)

circle 11 opposite last page



BACTERIA TEST STRIPS FOR COOLING WATER

Bacteria test strips provide a simple, inexpensive way to determine total bacteria levels in open recirculating cooling water systems such as cooling towers. Unlike conventional plate count procedures, the test strips do not require special training or laboratory techniques. Sampling and preparation takes less than two minutes per test. A 24-48 hour incubation period at room temperature is required.

(Biosperse° Test Strips - Ecologic Instrument Corp., 132 Wilbur Pl. Bohemia, NY 11716.)

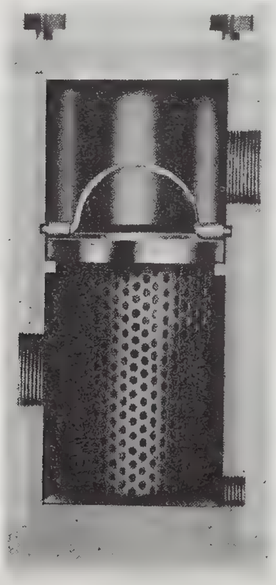
circle 10 opposite last page

STAINLESS STEEL ROTARY VANE PUMP

Rotary vane pump made from type 316 stainless steel is available for immediate delivery in the 1-1/2" size. The positive displacement pump can handle 5 to 35 gpm and features a pressure limiting valve and internal self-lubricating bearings. It can be furnished with packing or with single and double mechanical seals.

(SS 1-1/2" rotary pump- Foster Pump Works, Inc., 70 Airport Rd. Westerly, RI 02819.)

circle 13 opposite last page

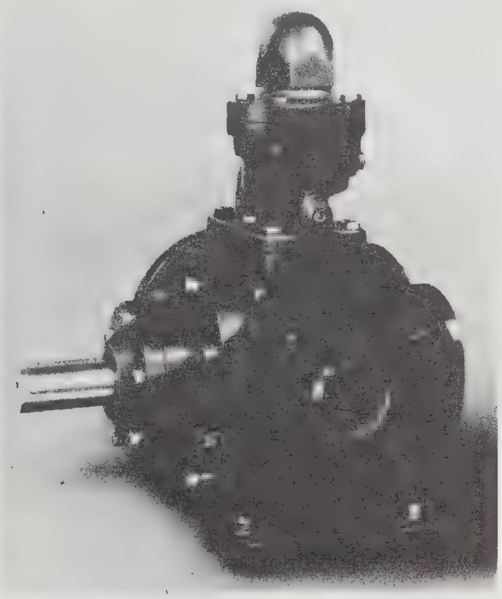


QUICK SETTING GROUT IS POURABLE

Quick setting grout makes initial set in ten minutes and cures to 5000 psi in one hour to expedite use of anchored equipment. The pourable mixture of hydraulic cement and water completely fills and seals the grouting area and cures to a final strength of 10,000 psig. It expands as it sets and will not loosen, shrink or crack under vibration, heat or cold.

(Garonite Grout - Garon Products, Inc., Raritan Center, Woodbridge Ave., Edison, NJ 08817.)

circle 12 opposite last page



ALL PLASTIC BASKET STRAINER

Basket strainer to remove undesirable solids and foreign matter can be furnished in either PVC or polypropylene construction, with Vitron O-ring seals to resist corrosive attack and avoid contamination. Liquid enters the strainer at the upper inlet port and flows through the basket, where solids are collected, and then exits through the lower outlet port. The basket is self locking to maintain proper positioning and has a large surface area to reduce cleaning frequency. Strainers are available in threaded or flanged configurations for 2",3" and 4" pipe sizes.

(Chemical basket strainers- Plast-O-Matic Valves Inc., 430 Rt. 46, Totowa, NJ 07512.)

circle 14 opposite last page

PAIL AND DRUM HEATER WITH OPTIONAL THERMOSTAT

Electric heaters for drums and pails in sizes from 5 to 55 gal can be furnished with specially designed thermostatic controls for precise maintenance of liquid viscosity. The heaters utilize a nickel alloy wire heating element encased in fiberglass reinforced silicone rubber to resist mechanical damage and attack by fats, oils, acids and other corrosives. They are rated at 115 or 230 vac and up to 100 watts and are attached by a simple mechanism and held in place by spring tension.

(Drum Heaters - Electro-Flex Heat, Inc., Northwood Industrial Park, Bloomfield, CT 06002.)

circle 15 opposite last page

SEALLESS DRUM PUMP IN STAINLESS STEEL OR PP

Sealless drum pump, that can empty a 55 gal drum in two minutes or less can be furnished with tubes made from polypropylene or stainless steel to handle virtually all chemicals and solvents. The pump can be run dry without damage and the motor can run continuously without overheating.

(Sealless drum pump - Serfilco Div., Service Filtration Corp., 1234 Depot St., Glenview, IL 60025.)

circle 16 opposite last page

ACID RESISTANT CEMENT

A chemical setting, modified silicate cement that resists most solvents, oils, acids and acid salts, and alkalis over a pH range from 0 to 9. The fast-setting cement is supplied as a powder which has a long shelf life and is mixed with water for use. It is non-corrosive to virtually all metals, and quickly develops a compressive strengh of 4500-5000 psi and withstands temperatures up to 1750°F. The acid-proof cement is availavle in both trowel and gunnite grades.

(Acid-alk cement - Sauereusen Chem. Co., RIDC Industrial Park, Pittsburgh, PA 15238

circle 17 opposite last page

BACK TO BASICS...

Safe Production and Use of Liquid SO_2

By Tex Sawyer

This article is aimed at those of you who are using powdered sulfites or bisulfites for microbiological inhibition. Working with these powders can tend to be messy and they oxidize and hydrate with time, thereby changing (losing) strength.

With liquid SO_2 solutions, you can know, at any time, how much SO_2 you are adding by a simple hydrometer check.

To begin, I can't stress too strongly that both liquid and gaseous SO_2 are extremely hazardous compounds and must be handled with great care.

A few simple rules to follow are 1) prepare aqueous solutions in a well ventilated area, 2) cover the mouth of the solution container with a wet cloth during bubbling, and 3) avoid breathing, skin or eye contact (i.e. use goggles, gloves, and a moistened respirator) at all times!

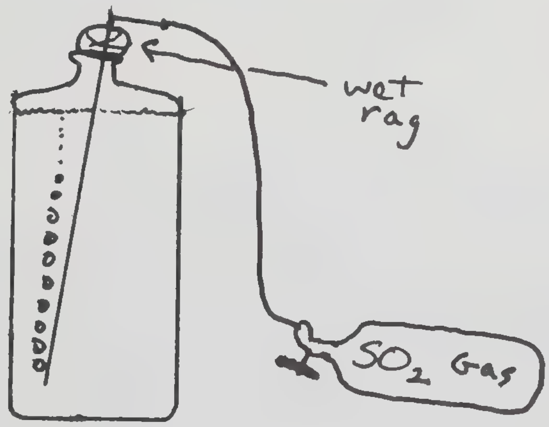
Solutions of sulfur dioxide are prepared by using a small dispensing cylinder (Snoden of Modesto, Ca. has a 25 lb. and a new 8 lb. cylinder) to bubble liquid SO_2 into a 5 gal. glass demijon. Place the dispensing tube to the bottom of an almost full bottle of clean water, leaving space for expansion. Wrap a wet rag around the bottle mouth and hose, keep it wet. Open the cylinder a hair, you only want a small stream of bubbles that is completely gone by the time it reaches the surface of the water. Bubble for 12-14 hours. It's best to start in the afternoon and check it the next morning after your coffee break. Shut off the dispensing unit, mix the solution well with a long stainless or Teflon stir rod and pour a sample into a hydrometer jar.

You will need a specific gravity hydrometer, available from Scientific Products of Van Water Rogers Scientific Supply. It should be calibrated to 60°F and graduated from 1.0000 to 1.070. You will also need an accurate thermometer, available at the previously mentioned supply house. Specific gravity is temperature dependent and will change as temperature changes, that is why the hydrometer is temperature calibrated.

After reading from the bottom of the meniscus (as in Brix readings) compare to the chart at the end of this article for the % concentration of the solution.

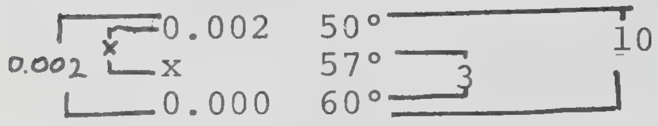
You can do a "quickie" temperature adjustment within a + or - 10°F range from 60°F by remembering this little rule of thumb:

50°F -0.002 from reading
60°F value is read directly
70°F +0.002 to reading



At this point, some of you will say, what if it isn't exactly 50° or 70°F. An accurate correction will allow for a more exact addition, something to be concerned about at such times as bottling.

Problem. My hydrometer reads 1.0265 at 57°F, what is the true reading at 60°F. Set up your problem in this manner;



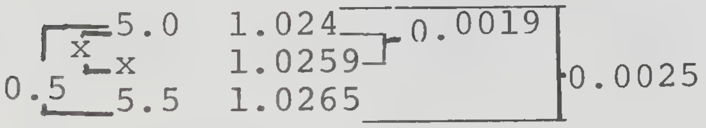
$$3/10 = x/0.002$$

$$\text{thus; } 0.3\ (0.002) = x$$

$$0.0006 = x$$

Remember to subtract 0.0006 from 1.0265 because your reading is colder than calibration temperature, giving you a specific gravity of 1.0259. (Note; if it were warmer than 60°F, the problem would be similar, but you would add the correction factor).

According to the Specific gravity vs. concentration chart, 1.0259 falls between 5.0% at 1.024 and 5.5% at 1.0265. Set up the problem again in the same manner, but with the new numbers, to find the actual concentration. A calculator is useful here:



$$\frac{0.0019}{0.0025} = \frac{x}{0.5}$$

$$\frac{0.00095}{0.0025} = x$$

$$x = .38$$

Now add .38 to 5.0 to get 5.38% solution concentration as your result. An alternate method is to cool or warm your sample to exactly 60° in a water bath, reading the hydrometer directly and doing the percent calculation once.

Many of you will now hurry to the calculator, calculate how much water to add and dilute the solution to 5% and get out your 5% addition charts. My advise is to grab your calculator and throw your charts away.

By this time I assume all of you have decided how much SO_2 in ppm you wany to add to your must or wine (the difference between what you have and what you want). And that you know how much must or wine that you have in gallons, and have just figured out the concentration of your SO_2 solution. With these figures in hand, plug them into this formula to find out how many liters of SO_2 solution to use:

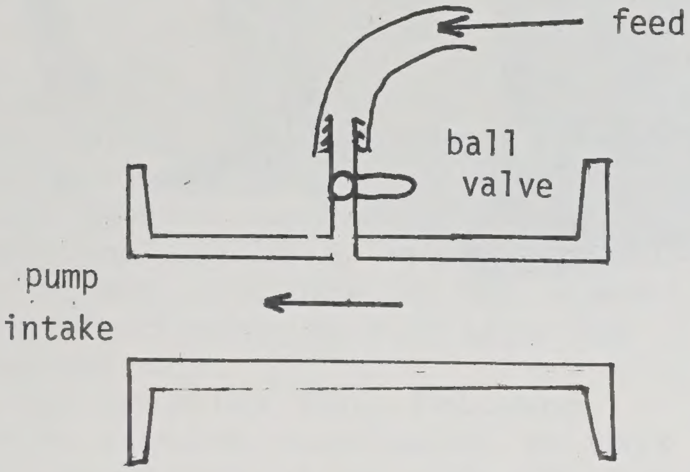
$$L = \frac{\text{Gal.} \times \text{PPM} \times 3.785}{[C]}$$

Where L = liters of SO_2 to add
G = gallons of must or wine
PPM = ppm SO_2 desired added
[C] = concentration of liquid SO_2 in parts per million

To figure out what your concentration of liquid SO_2 is in ppm, remember to multiply the % concentration by 10,000. Example: 5% solution = 50,000 ppm.

One more point that arises here, when adding SO_2 in any form, many winemakers have noted that they must add 20-30% more than calculated to achieve the desired ppm free SO_2 in the wine. This is due to evaporation during the addition, as well as the binding of some of the SO_2 in the must and wine. If the amount of SO_2 is crucial, then it is best to under-shoot and make a later adjusment.

Now, you are patting yourself on the back and hurrying out to add the liquid to your wine, but how are you going to get such a small amount of solution in to such a large amount of wine? Hint; for wine only, have your local winery plumbing supplier make you a venturi feed valve. You need, at least, a 1" triclover or other stainless steel ferrule to which a 1/2" ball valve is welded with a piece of plastic tubing attached to the valve. See diagram.



Percent SO_2	Specific Gravity	SO_2 required per 100 gal. of solution in pounds.
0.5	1.002	4.165
1.0	1.004	8.33
1.5	1.0065	12.495
2.0	1.009	16.66
2.5	1.0115	20.825
3.0	1.014	24.99
3.5	1.0165	29.155
4.0	1.019	33.32
4.5	1.0215	37.485
5.0	1.024	41.650
5.5	1.0265	45.815
6.0	1.029	49.98
6.5	1.0315	54.145
7.0	1.034	58.31
7.5	1.0365	62.475
8.0	1.039	66.64
8.5	1.0415	70.805
9.0	1.044	74.97
9.5	1.0465	79.135
10.0	1.049	88.33

This valve is placed on the inlet side of the pump. Wine is circullated through the system with the valve closed and the hose is placed in the solution of your choice (anything liquid, i.e. acids, bentonite, etc. will pass through this setup). Then open the valve to adjust the feed rate of the solution. 1 1/2" I.D or larger diameters work best, but with the 1" ferrules you may have to throttle down on your main feed valve, if the wine level is high causing a high head pressure.

For musts dilute the desired quantity of solution in a gallon of water and sprinkle the gallon of diluted solution per ton of grapes at the crusher. to figure the amount of SO_2 desired assume 225 gallons must per ton.

The Connoisseurs' Handbook of California Wines

Although The Practical Winery has avoided any consumer oriented slant to its contents, we have in the past expressed the opinion that we producers have an obligation to promote wine education and enjoy the ensuing consumption.

To this end I was pleased to recieve a copy of a new book which I would recommend without hesitation to the novice and enophile alike (and I'm not just saying this because I want more free books).

They bill it as "A complete and authoritative, critical guide to the wines and wineries of California and the West Coast, with information on other American wines".

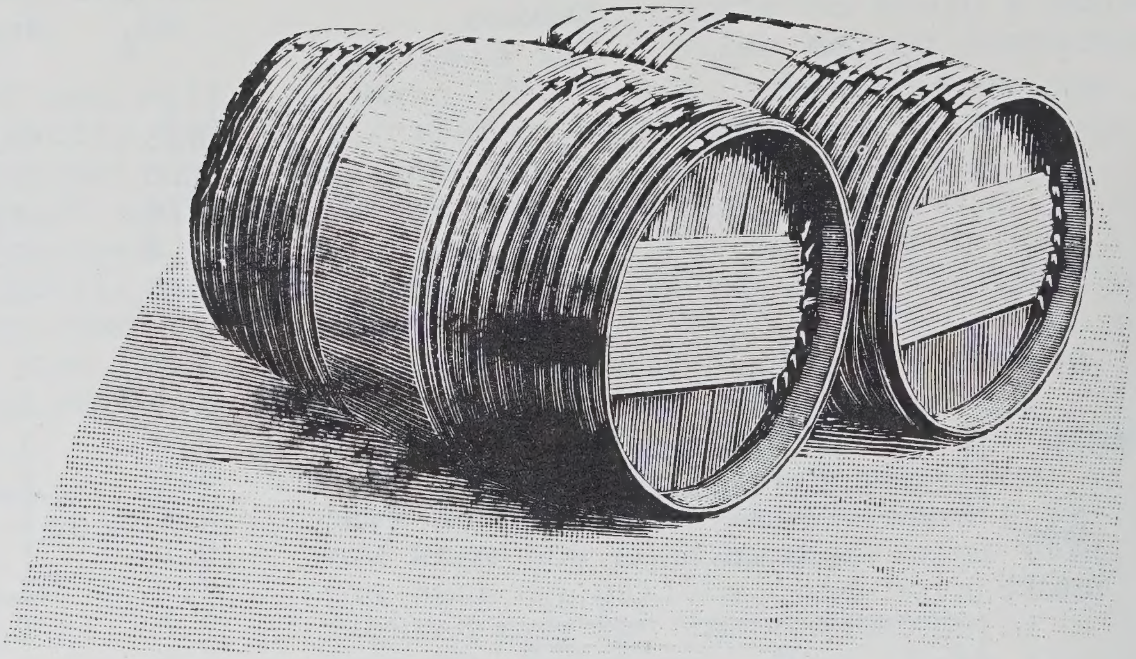
In their usual frank and admirably thorough style, which they display in The Connoisseurs' Guide to California Wines, The authors have included information on; the grape and wine varieties, wine regions, wineries in and outside of California, wine language, and tips on touring various areas. They even have vintage comments for the recent years specific to the four great varieties.

Not something to curl up with, but definetely an excellent reference.

$4.95

The Connoisseurs' Handbook of California Wines, C. Olken, E. Singer, and N. Roby. 1980, Alfred A. Knopf NY.

Wine Without Crushing Grapes



BY CHARLES L. SULLIVAN

One of the most important fads in California red wine production in the 1970's was vinification by maceration carbonique. The goal was to produce a less heavy, less alcoholic wine, but fruity and aromatic, ready to drink very soon after fermentation. This California interest coincided with equally intense research in southern France in the early 1970s. This research, according to Kenneth McCorkle, writing in Wines & Vines in 1974, had begun as early as 1934 and led to "the rediscovery of conclusions reached 50 years earlier relative to the metabolic capacities of fruit placed under anaerobic conditions."

These earlier conclusions in France seem to have penetrated California winemaking as early as the late 1870's and caused a brief flurry among some North Coast winemakers who imperfectly attempted to produce wines by this method, more often than not for the wrong reasons.

We first read of this winemaking process taking place in Sonoma County in 1878 at the Block & Colson Winery, a few miles north of Healdsburg. An article in the Pacific Rural Press that year titled "Wine Without Crushing Grapes" concentrated on the fine flavors produced. We hear nothing much more for a few years until a French born winemaker in the St. Helena area named Morel reported having excellent results. In 1883 Isaac De Turk, the famed Santa Rosa wine producer, announced that he had found the system to be a good one. Here after winemakers referred to the process as the Morel System.

In 1885 several wineries in the Napa and Sonoma areas were making red wine by placing the unstemmed, uncrushed grapes in fermenters and letting nature take its course.

William Scheffler, near St. Helena, reported that "We do not crush the grapes, but dump them stems and all, right from the gathering wagon into the fermenting tanks, except in hot weather. Then we let them lie over night to cool off." The San Francisco Merchant, that made this report added that "The object of this treatment is to avoid releasing the tannic and astringent quality of the grape too early, which crushing does, and so the fermentation goes forward evenly and thoroughly and it is claimed that the wine is more healthful and digestible than when the grapes are crushed." Ruby Hill in Pleasanton also reported good results.

It is clear, however, that the Morel System had its brief moment in North coast winemaking not so much because of the intense fruit flavors derived, but from the fact that in 1885 during the very hot weather conditions of the vintage, fermentations that might have "stuck" with their high sugars approaching 30° Brix, seemed to go through with no problems. Many wineries had a terrible time getting their high sugar musts to ferment out in the 95-105 degree temperatures experienced that October. Some thought that it was presence of the stems that helped most to complete the fermentations.

The troubles that followed brought a quick conclusion to this early experimentation with the Morel System, for complete as the fermentations were, the lever of volatile acidity was found to be a grave embarrassment to the winemakers involved. The problem was, of course that the system employed was not Maceration Carbonique. The result was spoilage.

One can imagine how serious the problem was in those old days of wooden wineries and open fermentation vats. Many of these wines soon found their way into the brandy still. Even today there can be a problem of acetobacters in producing sound wine by the CM method. This fact was noted by Professor Vernon Singleton in 1974 when commenting on experiments with CM produced wines at UC Davis' experimental winery.

After the disappointing results from the Morel System in 1885 we hear little about making wine in California without crushing the grapes. The modern phase began in 1972 when Sterling produced a CM Gamay Beaujolais. Next year several others followed suit: Cuvaison, Grand Cru, Montevina, Thomas Kruse, and Sherrill Cellars. By the 1979 vintage the fad had cooled some, but wineries as far afield as New York and Wisconsin were making wine by the CM process.

Charles Sullivan is a wine historian located in Los Gatos, California.

EDITORS' NOTES ON;

CARBONIC MACERATION- THE STATE OF THE ART, 1980

November 15,1980, saw a tasting at the Mark Hopkins Hotel in San Francisco sponsered by KQED, a local public radio and television station. Complementing the 20 Nouveau wines served were the wares of an equal number of restaurants with an eye to matching food to the wines.

In inquiring about the production techniques used, I found the following:

1) Whole clusters placed in the vat, blanketed with CO_2, the vat was then sealed for 2 weeks and crushed into a press at the end of that time.

2) Same as above with the addition of a yeast culture poured over the top.

3) Same as #2 with SO_2 gas blown in with the CO_2.

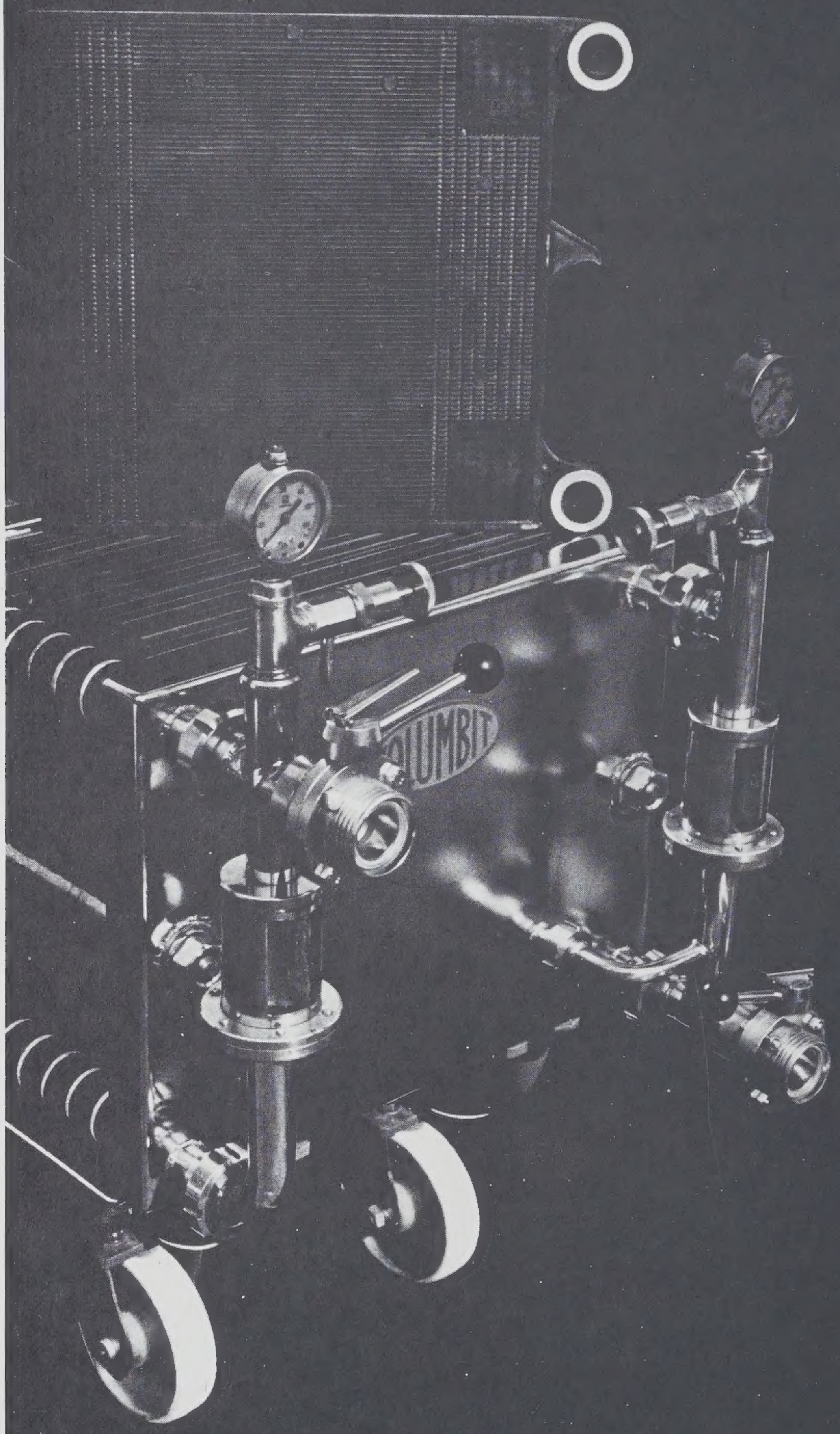
4) Whole clusters placed in a tank, the available juice (approximately50 gallons per 1000 gal volume) was drawn off, 25ppm SO_2 for the final volume was added and pumped over the top. The next day the juice was drawn off again and yeast was added, this was then pumped over the top. The juice for the next three days was pumped over the top once a day. The tank then was then left for 2 weeks, crushed into the press etc.

5) Same as #4 except the extra room between the grapes was filled with wine (generally the hard press of a blanc de noir) for maximum tank utilization.

6) Grapes crushed,stemmed, fermented to the color desired and pressed.

7) As for the Chardonnay-Nouveau from Lawrence winery, I don't know how this differs from any of his other offerings.

the Filters



This is our new P–40 Filter . . . It combines the best features of quality and value at a lower cost than our "S" series filters. The plastic filter plates are extremely easy to clean and withstand steam sterilization. The filter is fitted with pressure gauges, stainless steel front and back plates, connecting rods, drip tray, and inlet and outlet fittings. Available in 40cm x 40cm size (16″ x 16″) with a loading capacity of from 20 to 60 sheets . . . A fine piece of equipment at a reasonable cost from the craftsmen at Columbit . . . where you always get more for your money . . .

Joe Gosende — Columbit U.S.A., Inc.
736 Linden Avenue
Burlingame, California 94010
Tel: (415) 348–1462

In Canada:
A. O. Wilson, Process Equipment, Ltd.
P.O. Box 820, Bolton, Ontario, Canada
Tel: (416) 857–1511

COLUMBIT

circle 20 opposite last page